



AN ISO 9001 : 2008 COMPANY & NABL ACCREDITED LABORATORY AS PER ISO/IEC 17025:2005

Certificate No.: TC-5548

# 4, 7TH MAIN MALLESWARAM, BANGALORE -3

### QC ABSTRACT

**NAME OF WORK:** Improvements and Maintenance of Culvert at BHEL Mini Colony and Surrounding Area in Ward No 13 Mallasandra Shettyhalli Sub Division.

| SL NO | Item Of Work                      | Name of Test                           | Frequency of Test/Quantity | Executed Quantity | Number of Tests Required | Number of Tests Conducted |
|-------|-----------------------------------|----------------------------------------|----------------------------|-------------------|--------------------------|---------------------------|
| 1     | Cement                            | Materials                              |                            |                   | 1                        | 1                         |
|       |                                   | Finess by dry sieving                  | One Test                   |                   | 1                        | 1                         |
|       |                                   | Finess by Air permeability method      | One Test                   |                   | 1                        | 1                         |
|       |                                   | Density                                | One Test                   |                   | 1                        | 1                         |
|       |                                   | Standard Consistency                   | One Test                   |                   | 1                        | 1                         |
|       |                                   | Initial Setting time                   | One Test                   |                   | 1                        | 1                         |
|       |                                   | Final Setting time                     | One Test                   |                   | 1                        | 1                         |
|       |                                   | Soundness (Le Chatelier's Method)      | One Test                   |                   | 1                        | 1                         |
|       |                                   | Compressive Strength                   | One Test                   |                   | 1                        | 1                         |
|       |                                   | SIEVE ANALYSIS                         | One Test                   |                   | 1                        | 1                         |
| 2     | Coarse aggregate(40 mm down size) | Flakiness Index                        | One Test                   |                   | 1                        | 1                         |
|       |                                   | Elongation Index                       | One Test                   |                   | 1                        | 1                         |
|       |                                   | Specific Gravity                       | One Test                   |                   | 1                        | 1                         |
|       |                                   | Bulk Density(Loose)                    | One Test                   |                   | 1                        | 1                         |
|       |                                   | Bulk Density(Compacted)                | One Test                   |                   | 1                        | 1                         |
|       |                                   | Water Absorption                       | One Test                   |                   | 1                        | 1                         |
|       |                                   | SIEVE ANALYSIS                         | One Test                   |                   | 1                        | 1                         |
|       |                                   | Flakiness Index                        | One Test                   |                   | 1                        | 1                         |
|       |                                   | Elongation Index                       | One Test                   |                   | 1                        | 1                         |
|       |                                   | Specific Gravity                       | One Test                   |                   | 1                        | 1                         |
| 3     | Coarse aggregate(20 mm down size) | Bulk Density(Loose)                    | One Test                   |                   | 1                        | 1                         |
|       |                                   | Bulk Density(Compacted)                | One Test                   |                   | 1                        | 1                         |
|       |                                   | Water Absorption                       | One Test                   |                   | 1                        | 1                         |
|       |                                   | Aggregate crushing Value               | One Test                   |                   | 1                        | 1                         |
|       |                                   | Aggregate Impact Value                 | One Test                   |                   | 1                        | 1                         |
|       |                                   | SIEVE ANALYSIS                         | One Test                   |                   | 1                        | 1                         |
|       |                                   | Water Absorption                       | One Test                   |                   | 1                        | 1                         |
|       |                                   | Specific Gravity                       | One Test                   |                   | 1                        | 1                         |
|       |                                   | Material finer than 75 micron          | One Test                   |                   | 1                        | 1                         |
|       |                                   | Bend test                              | One Test                   |                   | 1                        | 1                         |
| 4     | Fine aggregate                    | Tensile Test                           | One Test                   |                   | 1                        | 1                         |
|       |                                   | Yield Test                             | One Test                   |                   | 1                        | 1                         |
|       |                                   | ReBend test                            | One Test                   |                   | 1                        | 1                         |
|       |                                   | Compressive Strength(7days and 28days) | 5 set /51-100 cum          | 55.25             | 10                       | 10                        |
| 5     | Steel                             |                                        |                            |                   |                          |                           |
| 6     | RCC(M20)                          |                                        |                            |                   |                          |                           |

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ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ  
ಎಸ್.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು

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HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL  
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# 4, 7TH MAIN MALLESWARAM, BANGALORE -3

Certificate No.: TC-5548

Format No: CP/TF/01

### TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

**Lab ID** : CP-2019-12-23-54 **Date:** 12-12-19  
**Customer** : Assistant Executive Engineer, Shettyhalli Sub Division, BBMP, Bangalore.  
**Address** : Shettyhalli Sub Division, BBMP, Bangalore.  
**Project Name** : Improvements and Maintenance of Culvert at BHEL Mini Colony and Surrounding Area in Ward No 13 Mallasandra Shettyhalli Sub Division.  
**Agency** : Sri. D. V Kumar, #657, 5th Main Road, LG Ramanna Layout, Laggere, Bangalore-58.  
**Customer's Reference** : EE/DD/WO/420/19-20  
**Source of Sample** : Sample supplied by Agency  
**Sample Condition** : Satisfactory  
**Date of Receipt** : 09-12-19  
**Sample Type** : Birla Super 53 grade  
**Reference to BIS codes** : IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification ,  
 IS 4031 (Part 1,2,3,4,5, 6,11):1988  
 IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4  
 IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5  
 IS 4031 Part 3, Determination of Soundness, Clause 5, Clause 6  
 IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5  
 IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5  
 IS 4031 Part 11, DETERMINATION OF DENSITY , Clause 6

**Date of test** : 10-12-19  
**Environmental Conditions during test** : Temperature: 26°C  
 Humidity: 72%

| Sl.No. | Physical properties                                        | Results     | Requirement as per IS 12269: 2013 |
|--------|------------------------------------------------------------|-------------|-----------------------------------|
| 1      | Fineness by dry sieving (%)                                | 1.95        | —                                 |
| 2      | Finess by Air permeability method (m <sup>2</sup> /kg.Min) | 285.4       | 225m <sup>2</sup> /kg, Min        |
| 3      | Density (gm/cc)                                            | 3.13        | —                                 |
| 4      | Standard Consistency (%)                                   | 29.5%       | Not specified                     |
| 5      | Initial Setting time                                       | 155 minutes | Not less than 30 minutes          |
| 6      | Final Setting time                                         | 260 minutes | Not more than 600 minutes         |
| 7      | Soundness (Le Chatelier's Method)                          | 2mm         | Not more than 10 mm               |

**Note:**

The results pertain to the samples received and tested.  
 All information furnished by Customer/Representative  
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 Samples will be disposed after 90 days from the date of issue of test certificate

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\*\*\*\*End of Report\*\*\*\*

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## TEST REPORT ON COARSE AGGREGATES

Lab ID : CP-2019-12-23-54 Date: 12-12-19  
Customer : Assistant Executive Engineer, Shettyhalli Sub Division, BBMP, Bangalore.  
Address : Shettyhalli Sub Division, BBMP, Bangalore.  
Project Name : Improvements and Maintenance of Culvert at BHEL Mini Colony and Surrounding Area in Ward No 13 Mallasandra Shettyhalli Sub Division.  
Agency : Sri. D.V Kumar, #657, 5th Main Road, LG Ramanna Layout, Laggere, Bangalore-58.  
Customer's Reference : EE/DD/WO/420/19-20  
Source of Sample : Sample supplied by Agency  
Sample condition : Satisfactory  
Date of Receipt : 09-12-19  
Sample Type : 40mm down size coarse aggregate  
Reference to BIS codes : IS: 383:2016 (Specification for Coarse and fine Aggregates )  
IS: 2386 :1963(Part - 1,3,4) RA2011  
IS 2386 Part 1: Particle Size and Shape  
IS 2386 Part 3: Specific gravity, Density, Voids, Water Absorption  
IS 2386 Part 4: Mechanical Properties  
Date of test : 09-12-19

### SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:

Total weight taken : 15000 grams

| Sample No. | Sieve No. | Weight Retained in gms | Cumulative Weight Retained in gms | % Cumulative Weight Retained | % Passing | Required as per IS 383:2016 |
|------------|-----------|------------------------|-----------------------------------|------------------------------|-----------|-----------------------------|
| 1          | 80 mm     | 0                      | 0                                 | 0.0                          | 100       | 100                         |
| 2          | 40 mm     | 254                    | 254                               | 1.7                          | 98.3      | 90-100                      |
| 3          | 20 mm     | 5422                   | 5676                              | 37.8                         | 62.2      | 30-70                       |
| 4          | 10 mm     | 4132                   | 9808                              | 65.4                         | 34.6      | 10-35                       |
| 5          | 4.75 mm   | 4854                   | 14662                             | 97.7                         | 2.3       | 0-5                         |
| 6          | Pan       | 338                    | 15000                             | 100.0                        | 0         | ---                         |

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## TEST REPORT ON COARSE AGGREGATES

**Lab ID** : CP-2019-12-23-54 **Date:** 11-12-19

**Customer** : Assistant Executive Engineer, Shettyhalli Sub Division, BBMP, Bangalore.

**Address** : Shettyhalli Sub Division, BBMP, Bangalore.

**Project Name** : Improvements and Maintenance of Culvert at BHEL Mini Colony and Surrounding Area in Ward No 13 Mallasandra Shettyhalli Sub Division.

**Agency** : Sri. D.V Kumar, #657, 5th Main Road, LG Ramanna Layout, Laggere, Bangalore-58.

**Customer Reference** : EE/DD/WO/420/19-20

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 09-12-19

**Sample Type/ Size** : 20mm down size coarse aggregate

**Reference to BIS codes** : IS: 383:2016 (Specification for Coarse and fine Aggregates )  
IS: 2386 :1963(Part - 1,3,4) RA2011  
IS 2386 Part 1: Particle Size and Shape  
IS 2386 Part 3: Specific gravity, Density, Voids, Water Absorption  
IS 2386 Part 4: Mechanical Properties

**Date of test** : 09-12-19

### SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:

| Total weight taken |           | 5000                   |                                   | grams                        |           | Required as per IS 383:2016 |
|--------------------|-----------|------------------------|-----------------------------------|------------------------------|-----------|-----------------------------|
| Sample No.         | Sieve No. | Weight Retained in gms | Cumulative Weight Retained in gms | % Cumulative Weight Retained | % Passing |                             |
| 1                  | 40 mm     | 0                      | 0                                 | 0                            | 100       | 100                         |
| 2                  | 20 mm     | 235                    | 235                               | 4.7                          | 95.3      | 90-100                      |
| 3                  | 10 mm     | 2470                   | 2705                              | 54.1                         | 45.9      | 25-55                       |
| 4                  | 4.75 mm   | 2133                   | 4838                              | 96.8                         | 3.2       | 0-10                        |
| 5                  | Pan       | 162                    | 5000                              | 100                          | 0         | -                           |

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Certificate No.: TC-5548

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## TEST REPORT OF FINE AGGREGATE

Date: 11-12-19

Lab ID : CP-2019-12-23-54  
 Customer : Assistant Executive Engineer, Shettyhalli Sub Division, BBMP, Bangalore.  
 Address : Shettyhalli Sub Division, BBMP, Bangalore.  
 Project Name : Improvements and Maintenance of Culvert at BHEL Mini Colony and Surrounding Area in Ward No 13 Mallasandra Shettyhalli Sub Division.  
 Agency : Sri. D.V Kumar, #657, 5th Main Road, LG Ramanna Layout, Laggere, Bangalore-58.  
 Customer's Reference : EE/DD/WO/420/19-20  
 Source of Sample : Sample supplied by Agency  
 Sample Condition : Satisfactory  
 Date of Receipt : 09-12-19  
 Sample Type : Fine Aggregate  
 Reference to BIS codes : IS 383 : 2016 (Specification for Coarse and fine Aggregates)  
 IS: 2386 :1963(Part - 1, 3) RA2012  
 IS 2386 Part 1: Particle Size and Shape  
 IS 2386 Part 3: Specific gravity, Density, Voids, Water Absorption  
 Date of test : 09-12-19  
 Total weight taken : 1000 grams

| Sl.no | Sieve Size | Weight Retained (gms) | Cumulative Weight Retained (gms) | % Cumulative Weight Retained | % Passing | Requirement as per IS 383:2016 |                 |                  |                 |
|-------|------------|-----------------------|----------------------------------|------------------------------|-----------|--------------------------------|-----------------|------------------|-----------------|
|       |            |                       |                                  |                              |           | Grading Zone I                 | Grading Zone II | Grading Zone III | Grading Zone IV |
| 1     | 10 mm      | 0                     | 0                                | 0.0                          | 100.0     | 100                            | 100             | 100              | 100             |
| 2     | 4.75 mm    | 27                    | 27                               | 2.7                          | 97.3      | 90-100                         | 90-100          | 90-100           | 95-100          |
| 3     | 2.36 mm    | 55                    | 82                               | 8.2                          | 91.8      | 60-95                          | 75-100          | 85-100           | 95-100          |
| 4     | 1.18 mm    | 239                   | 321                              | 32.1                         | 67.9      | 30-70                          | 55-90           | 75-100           | 90-100          |
| 5     | 600 micron | 205                   | 526                              | 52.6                         | 47.4      | 15-34                          | 35-59           | 60-79            | 80-100          |
| 6     | 300 micron | 203                   | 729                              | 72.9                         | 27.1      | 5-20                           | 8-30            | 12-40            | 15-50           |
| 7     | 150 micron | 191                   | 920                              | 92.0                         | 8.0       | 0-10                           | 0-10            | 0-10             | 0-15            |
| 8     | Pan        | 80                    | 1000                             | 100.0                        | 0.0       | ---                            | ---             | ---              | ---             |

Result : The tested Sample Conforms to Grading Zone II

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## TEST RESULTS OF STEEL

**Lab ID** : CP-2019-12-23-54 **Date:** 14-12-19

**Customer** : Assistant Executive Engineer, Shettyhalli Sub Division, BBMP, Bangalore.

**Address** : Shettyhalli Sub Division, BBMP, Bangalore.

**Project Name** : Improvements and Maintenance of Culvert at BHEL Mini Colony and Surrounding Area in Ward No 13 Mallasandra Shettyhalli Sub Division.

**Agency** : Sri. D.V Kumar, #657, 5th Main Road, LG Ramanna Layout, Laggere, Bangalore-58.

**Customer's Reference** : EE/DD/WO/420/19-20

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 13-12-19

**Sample Type** : Sunvik

**Reference to BIS codes** : IS 1786-2008, IS:1608-2005(RA 2011), IS 1599-2012.

**Date of test:** : 13-12-19

| Sl.No | Identification of sample | Grade of the sample | Diameter of the steel bar | Weight of the sample | Yield stress         | Tensile strength     | Elongation | Bend test    | Rebend test  |
|-------|--------------------------|---------------------|---------------------------|----------------------|----------------------|----------------------|------------|--------------|--------------|
|       |                          |                     | (mm)                      | (kg/m)               | (N/mm <sup>2</sup> ) | (N/mm <sup>2</sup> ) | (%)        |              |              |
| 1     | Sunvik                   | Fe500               | 10                        | 0.616                | 528                  | 672                  | 20.0%      | Satisfactory | Satisfactory |
| 2     | Satisfactory             | Fe500               | 12                        | 0.888                | 544                  | 668                  | 20.0%      | Satisfactory | Satisfactory |
| 3     | Sunvik                   | Fe500               | 16                        | 1.522                | 572                  | 688                  | 19.5%      | Satisfactory | Satisfactory |

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 \*End of Report\*



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